APPLICATION		
DASH NO.	NEXT ASSY	USED ON
-140		960-2224 960-2225 960-2226

TITLE SHEET

INDEX

	SHEET NO.
TITLE SHEET	1
REVISIONS	2
DOCUMENT	3

This document is an unpublished work. Copyright 2001 Honeywell International Inc. All rights reserved.

This document and all information and expression contained herein are the property of Honeywell International Inc., and is provided to the recipient in confidence on a "need to know" basis. Your use of this document is strictly limited to a legitimate business purpose requiring the information contained therein. Your use of this document constitutes acceptance of these terms.

Typed signatures constitute approval. Actual signatures on file at Honeywell in Redmond WA.
All pages of this document are at same revision level.

CONTRACT NO.	PRECIOUS METAL INDICATOR CODE: N/A	**Honeywell International Inc.** Redmond, Washington 98073-9701	**Honeywell**

DRAWN	Susie Wright	17-Aug-01	Generic Installation Ground Test Procedure for the Mark VII Enhanced GPWS			
CHECK						
ENGR	Susie Wright	17-Aug-01				
MFG						
QA			SIZE	CAGE CODE	DWG NO.	REV
APVD	James F. Mulkins	17-Aug-01	A	97896	060-4167-140	-
APVD			SCALE: NONE		SHEET 1 OF 33	

REVISIONS				
SH	REV	DESCRIPTION	DATE	APPROVED

1 Introduction

This document provides a procedure for the checkout of aircraft installations of the Honeywell Enhanced Ground Proximity/ Windshear Warning System (EGPWS).

This procedure verifies the interface wiring between the various aircraft sensors, switches, displays, and the EGPWS input signal processing and configuration. This check is accomplished by manipulating the various signal inputs and verifying the signal values within the EGPWS. The signal inputs are manipulated by the appropriate system tester or by directly varying the sensor input. The signal values captured by the EGPWS are determined via a PC running a Terminal Emulator program such as ProCom, Kermit, MS-Windows Terminal, or Honeywell's WinVIEWS software. See Appendix A for details.

2 Effectivity

The procedures defined herein are effective for the installation of the Mark VII Enhanced GPWS with a part number 965-1076-0XX-XXX-XXX. This includes aircraft types identified as "Bizjet" in Tables 5.2.1-X of the MK VII Interface Control Document, document number 993-1076-401.

3 Reference Documents

965-0976-603	Product Specification for the Enhanced Ground Proximity Warning System (EGPWS)
993-1076-401	Mark VII Enhanced GPWS Interface Control Document
	Ground Proximity and Windshear system wiring diagrams for the aircraft being tested

4 Required Test Equipment

- PC with EGPWS RS 232 cable & Terminal Emulator Software, such as WinVIEWS
- Test Set for Radio Altimeter
- Test Set for Air Data System
- Test Set for ILS System
- Other Tools and Equipment as Required
  - Optional: IRS Breakout and Tilt Table
  - Optional: EGPWS Break-out Box
  - Multimeter

5 Aircraft/Equipment Identification

This section is optional.

Record the following information:

Aircraft Registration/Tail Number: _____

Aircraft Serial Number: _____

	P/N	S/N	Mod Status
EGPWS	_____	_____	_____

6 Equipment Identification

	MODEL No.	**P/N**	**S/N**
Radio Altitude-1	_____	_____	_____
Air Data-1	_____	_____	_____
Attitude-1 (Pitch & Roll)	_____	_____	_____
Acceleration	_____	_____	_____
Glideslope/Localizer-1	_____	_____	_____
Angle Of Attack (Vane):	_____	_____	_____
Position-1 (GPS/FMS)	_____	_____	_____
Other Relevant Equipment:			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

7 Test Procedures

Apply power to the aircraft and ensure that the equipment listed above is operating normally. Ensure that all navigation sensors are initialized and in Nav mode.

The EGPWS must be installed and the power turned on. Input signals will be varied by use of the Test Sets or by other methods. Each internal EGPWS parameter is identified by a unique label. This allows the monitoring of the response of the EGPWS computer to these adjustments. The parameters are monitored and displayed on the PC by means of the RS-232 communication link and the Terminal Emulator or WinVIEWS software.

7.1 Passing Criteria

All portions of Test Sections 7.3 through 8.15 are required unless marked as Optional in the following tables. All Test Sections which instruct the operator to **VERIFY** specified performance, must pass in order to successfully complete this ground test procedure. Since this test procedure is designed to verify various aircraft cockpit configurations, the actual switch and light nomenclature and configuration may vary from that specified in this document.

7.2 Aircraft Configuration

In Self Test Level 3, the EGPWS identifies selected aircraft configuration items. The following Table identifies the basic aircraft configuration data, aircraft signals, and optional configuration items for this particular aircraft.

Note: Categories 2 through 7 are input signals particular to this aircraft
Categories 1 and 8 through 17 are optional selectable items

Category	Signal Type Optional Items	ID Number	Test Section	Sub-Categories	Select Type	If True is selected, message is reported in Self Test Level 3 (T=true) (F=false) (Y=yes) (N=no)	
1	Aircraft Type		←7.3.9.4a				
			7.3.9.4b →	AOA And Flap Type			
2	Radio Altitude		←7.3.9.4c				
3	Air Data		←7.3.9.4d				
4	Attitude/Accel Select Flashing Lamps	N/A	7.3.9.4e→	Attitude/Accel Select			
			7.3.9.4u→	Flashing Lamps		**Y**_____	**N**_____
5	Nav Input Type		←7.3.9.4f				
6	Position Input		←7.3.9.4g				
7	Terrain Display /TA&D Enable		←7.3.9.4h				
		Note-1	7.3.9.4r/s	TA&D Disable/TCF Disabled		**T**_____	**F**_____
8	Altitude Callouts		←7.3.9.4i	**Note-2**			
9	Audio Output Level		←7.3.9.4j	Volume Select			
		Note-3	7.3.9.4p→	Alternate Mode 6 Volume		**On**_____	**Off**____
10	Options Select Group #1	**Note-4**	7.3.9.4z→	Obstacle Awareness		**T**_____	**F**_____
			7.3.9.4v→	TA&D Alternate Pop-Up		**T**_____	**F**_____
			7.3.9.4w→	Flap Reversal Select		**T**_____	**F**_____
11	Options Select Group #2		7.3.9.4x→	Mode 6 Volume Reduction		**T**_____	**F**_____
			7.3.9.4n→	Smart Callout Selected		**T**_____	**F**_____
			7.3.9.4t→	Bank Angle Enable		**T**_____	**F**_____
12	Options Select Group #3	**Note-5**	7.3.9.4q→	Windshear Caution Voice		**F**_____	**T**_____
			7.3.9.4aa	ARINC 743 GPS Select		**T**_____	**F**_____
			7.3.9.4o→	Audio Declutter Disable		**T**_____	**F**_____
13	Voice Menu		←7.3.9.4k				
14	I/O Discrete Type		←7.3.9.4l				
15	Program Pin Parity						
16	Optional Inputs		←7.3.9.4m				
17	Options Select Group #4	**Note-6**	7.3.9.4cc→	Peaks Enable		**T**_____	**F**_____
			7.3.9.4dd	GPS Altitude WGS-84		**T**_____	**F**_____

NOTE-1: If ID = 0, TA&D and TCF are disabled

NOTE-2: List the Altitude Callouts: _____

NOTE-3: Alternate Mode 6 Volume Select available in 965-1076-0XX-206-206 and later part number.

NOTE-4: Obstacle Awareness Enable available in 965-1076-0XX-204-204 and later part number.

NOTE-5: ARINC 743 GPS Select available in 965-1076-0XX-206-206 and later part number.

NOTE-6: Category 17 Available in 965-1076-0XX-208-208 and later part number.

7.3 Output Signal Test

7.3.1 Cockpit Audio

This test section confirms that the EGPWS cockpit audio announcements are presented on both the cockpit headphones and the cockpit speakers.

EGPWS Audio announcements may be activated by initiating the EGPWS Self Test Level 1, reference paragraph 7.3.7. Note that the Self Test audio volume is 6 dB lower than the normal Warning audio volume.

VERIFY the following conditions for the Captain's and First Officer's audio systems using EGPWS Self Test.

	Setup Condition	Cockpit Audio Expected	Observed Value	Pass	Fail
Captain's Speaker	Normal	Yes			
Captain's Headphones	Normal	Yes			
Captain's Headphones	Mic Keyed/Muted	Yes			
First Officer's Speaker	Normal	Yes			
First Officer's Phones	Normal	Yes			
First Officer's Phones	Mic Keyed/Muted	Yes			

End of Cockpit AUDIO Test.

7.3.2 Cockpit Annunciators

1. Press and hold the cockpit annunciator TEST switch and **VERIFY** that the following annunciators illuminate:

Note: Since this test procedure is designed to verify various aircraft cockpit configurations, the actual switch and light nomenclature and configuration may vary from that specified in this document.

	CAPT's / FO's		CAPT's / FO's
• GPWS (red)	____/_____	• WINDSHEAR FAIL (amber)	_____/_____
• BELOW GLIDESLOPE (amber)	_____/_____	• GPWS FAIL (amber)	_____/_____
• WINDSHEAR WARNING (red)	_____/_____	• TERRAIN INHIBIT (amber)	_____/_____
• WINDSHEAR CAUTION (amber)	_____/_____	• TERRAIN NOT AVAIL (amber)	_____/_____

Pass	Fail

End of Cockpit Annunciators Test.

7.3.3 Audio On (TCAS Inhibit) Discrete Output

This section verifies the TCAS Inhibit discrete from the GPWS to the TCAS system (J2-B13).

If the following test procedure is not appropriate, an alternate test may be used to verify that the EGPWS properly inhibits the TCAS system. An alternate test might be to confirm the TCAS Inhibit input discrete at the TCAS Processor or by observing the TA/RA mode changes to TA Only whenever the EGPWS Audio On discrete is active.

1. Start TCAS self test.
2. Several seconds later activate the GPWS Self Test by depressing the **PRESS TO TEST** switch.
3. **VERIFY** that the TCAS system self test aural messages is inhibited by the EGPWS.

Pass	Fail

End of AUDIO ON Test.

7.3.4 Terrain Inhibit Discrete

1. Select the TERRAIN INHIBIT Annunciator/Switch and **VERIFY** that it illuminates. Deselect the TERRAIN INHIBIT switch and **VERIFY** that it goes out.

Pass	Fail

End of Terrain Inhibit Annunciator/Switch Test.

7.3.5 System Self Test

Using an RS-232 cable, connect the PC to the EGPWS front connector. See Appendix A for details on connecting and operating the PC. To continue with the remainder of the Ground Test Procedure, provide power to the EGPWS and related systems.

The following tests verify the installation through the built-in test (BIT) capabilities of the EGPWC.

A high level of confidence in the EGPWS installation can be achieved by initiating the EGPWS self test. The EGPWS System Self Test is divided into six levels. These are:

- Level-1 Go / No Go Test.
- Level-2 Current Faults.
- Level-3 EGPWS Configuration.
- Level-4 Fault History.
- Level-5 Warning History.
- Level-6 Discrete Input Test.

NOTE: Levels 4, and 5 are not tested in this procedure.

7.3.6 Self Test Initiation

Self Test is initiated by pressing the cockpit EGPWS **PRESS TO TEST** switch for less than 2 seconds. Alternatively, the Self Test may be initiated via the SELF TEST switch on the front of the EGPWS, or via the RS-232 Self Test Command. Please note that the Self Test aural volume is 6 dB lower than the warning aural volume.

7.3.7 Self Test Level 1 - Go/No Go Test

Since this test procedure is designed to verify various aircraft cockpit configurations, the actual switch and light nomenclature and color may vary from that specified in this document. Honeywell recommends the use of a red GPWS annunciator (connected to J1B-11) and amber BELOW G/S annunciator (connected to J1B-33) for Lamp Format 1. For Lamp Format 2, the use of a red PULL UP and amber GPWS is recommended. This test also checks cockpit audio.

1. Ensure the **TERRAIN INHIBIT** switch is NOT engaged.

2. Initiate the GPWS Self Test, reference paragraph 7.3.6.

3. **VERIFY** the following sequence:

- The amber **GPWS FAIL, WS FAIL** and **TERRAIN NOT AVAILABLE** annunciators illuminate.

Note: some display types (KCPB and other) will cause the previous annunciators to turn off here.

- The cockpit amber **BELOW G/S (or amber GPWS)** light turns on.
- *"GLIDESLOPE"* audible message is annunciated.
- BELOW G/S (or amber GPWS) light turns off.
- The cockpit amber **G/S INHIBIT** light turns on (if installed).
- G/S INHIBIT light turns off.
- The cockpit **red GPWS (or PULL UP)** light turns on.
- "*PULL UP"* audible message is annunciated.
- Red GPWS (or PULL UP) light turns off.
- The cockpit red **WINDSHEAR WARN** light turns on.
- Optional Siren and "*WINDSHEAR WINDSHEAR WINDSHEAR*" audible message is annunciated.
- The WINDSHEAR WARN light turns off.
- The cockpit amber **WINDSHEAR CAUTION** turns on.
- The WINDSHEAR CAUTION turns off.
- The cockpit **red GPWS (or PULL UP)** light turns on.
- If displays are installed, the Terrain Display Self Test pattern is displayed on the MFD.
- "*TERRAIN TERRAIN PULL UP*" audible message is annunciated.

Note: some installations may voice "*TERRAIN AHEAD PULL UP*" in the previous step.

- Red GPWS (or PULL UP) light turns off.

Note: If lamp format 2 is used, the amber GPWS will turn on and off at this point

- The Terrain Display Self Test pattern turns off after several sweeps of the terrain display (if installed).
- The **GPWS FAIL, WS FAIL** and **TERRAIN NOT AVAILABLE** annunciators are turned off.

End of Self Test Level 1.

Pass	Fail

7.3.8 Self Test Level 2 - Current Faults

NOTE: Ignore the status of the GPWS FAIL, WS FAIL and the TERRAIN NOT AVAILABLE annunciators.

NOTE: To get to a Level 2 Self Test the operator must cycle through Level 1. The following steps show the procedure to get to the Level 2 Self Test.

1. Initiate a Self Test by depressing the cockpit GPWS 'PRESS TO TEST' switch. (This is level 1.)
2. Once the Self Test Level 1 audio starts, press the cockpit GPWS 'PRESS TO TEST' switch for less than 2 seconds. (This will initiate level 2.) Alternatively, the RS-232 Self Test Command, ST 2, or the EGPWS Front Panel switch may be used to initiate this test.

   VERIFY the following voice messages are annunciated:

"CURRENT FAULTS" "NO FAULTS" "PRESS TO CONTINUE"

NOTE: If EGPWS Self Test is initiated by RS-232 command, PRESS TO CONTINUE will not be issued.

NOTE: If EGPWS Computer or System faults exist, the fault(s) will be annunciated as GPWS internal faults or GPWS external faults. The aural message will provide a description of the fault. If a fault is annunciated, it should be corrected prior to proceeding with the remainder of this ground test procedure.

End of Self Test Level 2.

Pass	Fail

7.3.9 Self Test Level 3 - EGPWS Configuration

NOTE: Ignore the status of the GPWS FAIL, WS FAIL and the TERRAIN NOT AVAILABLE annunciators.

1. Initiate a Self Test by depressing the cockpit GPWS '**PRESS TO TEST**' switch (this is level 1).

   Once the Self Test audio starts, press the GPWS '**PRESS TO TEST**' switch for less than 2 seconds (this will start level 2).
2. Immediately after the Self Test Level 2 "PRESS TO CONTINUE" message is annunciated, depress the cockpit GPWS 'PRESS TO TEST' switch (this will start level 3). Alternatively, the RS-232 Self Test Command, ST 3, or the EGPWS Front Panel switch may be used to initiate this test.
3. **VERIFY** that the following messages are annunciated and record all unspecified details:

NOTE**:** "X's" listed below represent numbers, letters, the word "point" or no annunciation. Any of these annunciations are acceptable where "X" is listed below (for example, the serial number could be annunciated as "SERIAL NUMBER 316").

"SYSTEM CONFIGURATION"

"PART NUMBER 965-1076-0XX-**XXX**-**XXX**" _____

"MOD STATUS **XX**" _____

"SERIAL NUMBER XXXX" _____

"APPLICATION SOFTWARE VERSION XXXXX" _____

"CONFIGURATION SOFTWARE VERSION XXXXX" _____

"TERRAIN DATABASE VERSION XXX" _____

"ENVELOPE MOD DATABASE VERSION XXX" _____

"BOOT CODE VERSION XXX" _____

7.3.9 Self Test Level 3 – (Continued)

4. **VERIFY** that the Observed Values Match those Expected Values. Reference Section 7.2 (Aircraft Configuration).

Item	Voice Message		Expected Value	Observed Value	PASS	FAIL
a	"AIRCRAFT TYPE"					
b	"AOA AND FLAP TYPE"					
c	"RADIO ALTITUDE TYPE"					
d	"AIR DATA TYPE"					
e	"ATTITUDE AND ACCELERATION TYPE"					
f	"NAVIGATION INPUT TYPE"					
g	"POSITION INPUT TYPE"					
h	"TERRAIN DISPLAY TYPE"					
i	"ALTITUDE CALLOUT MENU"					
j	"VOLUME SELECT"					
k	"AUDIO MENU"					
l	"I/O DISCRETE TYPE"					
m	"OPTIONAL INPUT TYPE" **(Note-1)**					
	The Following Only When Selected (Note-2) ➔↓					
n	"SMART CALLOUT SELECTED"					
o	"AUDIO DECLUTTER DISABLED"					
p	"ALTERNATE MODE 6 VOLUME SELECTED"	**(Note-1)**				
q	"WINDSHEAR CAUTION WITH VOICE SELECTED"					
r	"TERRAIN CLEARANCE FLOOR DISABLED"	**(Note-3)**				
s	"TERRAIN AWARENESS DISABLED"					
t	"BANK ANGLE SELECTED"					
u	"FLASHING LAMPS SELECTED"					
v	"ALTERNATE POP-UP SELECTED"					
w	"FLAP REVERSAL SELECTED"					
x	"MODE 6 LOW VOLUME PROGRAM PIN SELECTED"					
y	"MODE SIX LOW VOLUME SELECTED"					
z	"OBSTACLE AWARENESS ENABLED"	**(Note-4)**				
aa	"ARINC 743 GPS SELECTED"	**(Note-1)**				
bb	"STEEP APPROACH ENABLED"					
cc	"PEAKS ENABLED"	**(Note-5)**				
dd	"GPS ALTITUDE REFERENCE WGS 84 SELECTED"	**(Note-5)**				

NOTE-1: This message available on the 965-1076-0XX-206-206 and later part number.

NOTE-2: Message will be annunciated ONLY if Yes or True selected in section 7.2, Aircraft Configuration.

NOTE-3: These messages are enabled/disabled by one selection.

NOTE-4: This message available on the 965-1076-0XX-204-204 and later part number.

NOTE-5: This message available on the 965-1076-0XX-208-208 and later part number.

5. **VERIFY** that the following message is annunciated: **"PRESS TO CONTINUE**"

NOTE: If this test is initiated using the RS232 command ST 3, then the "Press to Continue" message is not given.

Pass	Fail

End of Self Test Level 3

8 Signal Input Tests

This series of tests verify the proper interconnections of the EGPWS digital, analog, and discrete signal inputs and outputs. The signal values will be verified with the WinVIEWS software or via a terminal emulation software. Each signal input corresponds to a unique EGPWS computer parameter name, the CVT Item, which can be monitored on the PC display via the WinVIEWS or a Terminal Emulator software program. Each following section identifies the input signal to be tested, the value to be tested and the parameter to be verified. WinVIEWS or the Terminal Emulator software may be started as described in Appendix A.

NOTE: Each Observed Value should be compared with the appropriate aircraft cockpit display or test set for cross-reference verification.

8.1 Radio Altitude

VERIFY the Radio Altimeter inputs per the following table.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Radio Altitude	**RawRA1**	A/C on GND	-15 to +3 (feet)			
Radio Altitude	**RawRA1**	500 *	490 to 510 (feet)			
Radio Altitude	**RawRA1**	1000 *	975 to 1025 (feet)			

* Other test values may be used. Maintain the same tolerance ±10 feet below 500 ft., ±25 feet above 500 ft. and note actual value tested.

If using Radio Altitude ID's 0, 1, 3 or 5, **VERIFY** the Radio Altimeter validity inputs (J1B-19 = 28Vdc) per the following table.

Radio Altitude Valid	**ARA1Val**	Invalid (circuit breaker opened)	0			
Radio Altitude Valid	**ARA1Val**	Valid (circuit breaker closed)	1			

If using Radio Altitude ID 1, **VERIFY** the Radio Altimeter and validity inputs (J1A-04 = 28Vdc) per the following table.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Radio Altitude	**RawRA2**	A/C on GND	-15 to +3 (feet)			
Radio Altitude	**RawRA2**	500 *	490 to 510 (feet)			
Radio Altitude	**RawRA2**	1000 *	975 to 1025 (feet)			
Radio Altitude Valid	**ARA2Val**	Invalid (circuit breaker opened)	0			
Radio Altitude Valid	**ARA2Val**	Valid (circuit breaker closed)	1			

* Other test values may be used. Maintain the same tolerance ±10 feet below 500 ft., ±25 feet above 500 ft. and note actual value tested.

8.2 Decision Height

Depending on the aircraft equipment configuration, this test may not be required or may need to be tested using other means. It is used to verify the discrete input signal that activates the "*MINIMUMS"* callout, reference Section 7.2, Note 1 for applicability. Varying Radio Altitude checks the DECISION HEIGHT Discrete Input (J1A-25).

Test Procedure:

1. Set the Radio Altimeter to 0 feet, or On Ground condition.
2. Set the Decision Height Bug to 350 feet. (Other test values may be used. Maintain a tolerance of ±10 feet and note actual value tested).
3. Increase the Radio Altitude to 400 feet.
4. **VERIFY** that the CVT Item, DHDsc Observed Value matches the Expected Value.

Signal	**CVT Item**	Test Value	Expected Value	Observed Value	Pass	Fail
DECISION HEIGHT	**DHDsc**	Not Selected	0			

5. Reduce the Radio Altitude to 300 feet.
6. **VERIFY** that the CVT Item, DHDsc Observed Value matches the Expected Value.

Signal	**CVT Item**	Test Value	Expected Value	Observed Value	Pass	Fail
DECISION HEIGHT	**DHDsc**	Selected	1			

7. Return the Radio Altitude input to the On Ground condition.

End of Radio Altimeter and Decision Height Test

8.3 Air Data Computer

Wiring for the Air Data Computer Inputs are checked by varying the inputs to the Air Data Computer via the Test Set for the Air Data System or via cockpit ADC Self Test controls.

CAUTION: Be very careful when using the Air Data System Test Set. Flight instruments and other expensive equipment can easily be damaged by improper adjustment of this tester.

1. Set the Captains Altimeter to a Pressure setting of 29.92.
2. **VERIFY** the Air Data Computer #1 Uncorrected Altitude input per the following table.

NOTE: The Test Value is the Altitude indicated on the Captain's Altimeter. This Altitude should be recorded in the Uncorrected Baro Altitude Test Value column. For reference, the altitude indicated on the Captain's Altimeter will be close to the field elevation. The difference between the Captain's Altimeter indication and field elevation will depend on the local barometric pressure. The Captain's Altimeter indication will vary from the field elevation at a rate of approximately 1000 feet / inch of barometric pressure relative to 29.92.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Uncorrected Baro Altitude	**RawBAlt1**	_____	Test Value ± 300 ft			

3. **Adjust** the pressure setting on the Captain's Altimeter such that the indicated altitude increases by 500 feet from the current indicated altitude, read and record _____ the barometric setting on the Captain's Altimeter.
4. **VERIFY** that the adjustment made in step 3 did not alter the Uncorrected Baro Altitude.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Uncorrected Baro Altitude	**RawBAlt1**	same as step 2 above ____	Test Value ± 300 ft			

5. **VERIFY** the Air Data Computer #1 Corrected Altitude, Baro Alt Rate, and Computed Airspeed inputs per the following table. Baro corrected altitude will read the same altitude selected on Captain's Altimeter.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Corr. Baro Altitude	**RawBCAlt1****	_____	Test Value ± 300 ft			
Computed Airspeed	**RawCAS1*****	100 * kts	100 ± 10 kts			
Baro Alt Rate	**RawBaroRt1******	0 fpm	0 ± 100 fpm			

* Other test values may be used. Maintain the same tolerance ± 10 kts and note the actual test value.
** If using air data type 1, 4, 8, 9 or 10 (see Section 7.2), use CVT Item **AnaCrAlt** for this test.
*** If using air data type 4, 8, 9 or 10, use CVT Item **RawAACCAS1** or **RawAACCAS** for this test.
**** If using air data type 9, use CVT Item **RawBaRtSy1** for this test.

6. **Set** the pressure setting to 29.92 on the Captain's Altimeter.
7. If using air data type 8, 9 or 29, **VERIFY** Barometric Altitude Rate Valid (J1B-27 = 28Vdc) input per the following table.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Baro Rate Valid	**ABaroRt1Val**	Valid	1			
Baro Rate Valid	**ABaroRt1Val**	Invalid (pull Breaker)	0			

8. If using air data type 8, 9 or 29, **VERIFY** Airspeed Valid (J2-G05 = 28Vdc) input per the following table.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Airspeed Valid	**ACAS1Val***	Valid	1			
Airspeed Valid	**ACAS1Val***	Invalid(pull breaker)	0			

*Use ACASVal if using –206-206 or earlier.

If using air data type 26, continue with steps 9 through 14.

9. Set the First Officer's Altimeter to a Pressure setting of 29.92.

10. **VERIFY** the Air Data Computer #2 Uncorrected Altitude input per the following table.

NOTE: The Test Value is the Altitude indicated on the First Officer's Altimeter. This Altitude should be recorded in the Uncorrected Baro Altitude Test Value column. For reference, the altitude indicated on the CaptFirst Officer's Altimeter will be close to the field elevation. The difference between the First Officer's Altimeter indication and field elevation will depend on the local barometric pressure. The first Officer's Altimeter indication will vary from the field elevation at a rate of approximately 1000 feet / inch of barometric pressure relative to 29.92.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Uncorrected Baro Altitude	**RawBAlt2**	_____	Test Value ± 300 ft			

11. **Adjust** the pressure setting on the First Officer's Altimeter such that the indicated altitude increases by 500 feet from the current indicated altitude, read and record _____ the barometric setting on the First Officer's Altimeter.

12. **VERIFY** that the adjustment made in step 3 did not alter the Uncorrected Baro Altitude.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Uncorrected Baro Altitude	**RawBAlt2**	same as step 2 above ____	Test Value ± 300 ft			

13. **VERIFY** the Air Data Computer #2 Corrected Altitude, Baro Alt Rate, and Computed Airspeed inputs per the following table. Baro corrected altitude will read the same altitude selected on First Officer's Altimeter.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Corr. Baro Altitude	**RawBCAlt2**	_____	Test Value ± 300 ft			
Computed Airspeed	**RawCAS2**	100 * kts	100 ± 10 kts			
Baro Alt Rate	**RawBaroRt2**	0 fpm	0 ± 100 fpm			

* Other test values may be used. Maintain the same tolerance ± 10 kts and note the actual test value.

14. **Set** the pressure setting to 29.92 on the First Officer's Altimeter.

End of AIR DATA Test

8.4 Instrument Landing System (Glideslope & Localizer):

This test verifies the Instrument Landing System connections to the EGPWS input.

1. If using navigation input type 0, 2, 3, 4, 8 or 9, **VERIFY** the ILS Tuned Input (J1B-01=28Vdc/J1A-03=Gnd) by **selecting** an ILS frequency on the Nav Control Head #1 and verifying that the CVT Item observed value matches the expected value (initial condition Not Selected).

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
ILS Select	**ILSTuned1**	Tune to an ILS frequency	1			
ILS Select	**ILSTuned1**	Tune to a VOR frequency	0			

2. If using navigation input type 2, 4 or 8, **VERIFY** the ILS Tuned Input (J2-F12=28Vdc/J2-F13=Gnd) by **selecting** an ILS frequency on the Nav Control Head #2 and verifying that the CVT Item observed value matches the expected value (initial condition Not Selected).

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
ILS Select	**ILSTuned2**	Tune to an ILS frequency	1			
ILS Select	**ILSTuned2**	Tune to a VOR frequency	0			

End of ILS Tuned Test.

3. **Simulate a Glideslope signal** (by Ramp tester or GS Press to test) and **VERIFY** Glide Slope Valid and Deviation inputs per the following tables:

Use the table below if using navigation input type 0, 2, 3, 4, 8 or 9

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Glideslope Valid	**AGS1Val**	Valid (ILS freq. Tuned & GS valid)	1			
Glideslope Valid	**AGS1Val**	Invalid (ILS freq. Not tuned or GS Not Valid)	0			
Glideslope	**RawAACGS1**	1 dots fly down	+1 ±.3 dot			
Glideslope	**RawAACGS1**	2 dots fly up	-2 ± .3 dot			

Use the table below if using navigation input type 2, 4 or 8

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Glideslope Valid	**AGS2Val**	Valid (ILS freq. tuned & GS valid)	1			
Glideslope Valid	**AGS2Val**	Invalid (ILS freq. Not tuned or GS Not Valid)	0			
Glideslope	**RawAACGS2**	1 dots fly down	+1 ±.3 dot			
Glideslope	**RawAACGS2**	2 dots fly up	-2 ± .3 dot			

Use the table below if using navigation input type 5 or 10

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Glideslope	**RawGS1**	1 dots fly down	+0.087 ±.03 dot			
Glideslope	**RawGS1**	2 dots fly up	-0.175 ± .03 dot			

End of Glideslope Test.

4. Simulate a Localizer signal (by Ramp tester or Loc Press to test) and **VERIFY** Glide Slope Valid and Deviation inputs per the following tables (an ILS frequency MUST be tuned, reference 8.3 items 1 and 2):

Use the table below if using navigation input type 0, 2, 3, 4, 8 or 9

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Localizer Valid	**ALoc1Val**	Valid (ILS freq. tuned & Loc valid)	1			
Localizer Valid	**ALoc1Val**	Invalid (ILS freq. Not tuned or Loc Not Valid)	0			
Localizer	**RawAACLoc1**	2 dots fly right	+2 ±.3 dot			
Localizer	**RawAACLoc1**	2 dots fly left	-2 ± .3 dot			

Use the table below if using navigation input type 2, 4 or 8

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Localizer Valid	**ALoc2Val**	Valid (ILS freq. tuned & Loc valid)	1			
Localizer Valid	**ALoc2Val**	Invalid (ILS freq. Not tuned or Loc Not Valid)	0			
Localizer	**RawAACLoc2**	2 dots fly right	+2 ±.3 dot			
Localizer	**RawAACLoc2**	2 dots fly left	-2 ± .3 dot			

Use the table below if using navigation input type 5 or 10

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Localizer	**RawLoc1**	1 dots fly down	+0.044 ±.015 dot			
Localizer	**RawLoc1**	2 dots fly up	-0.087 ± .015 dot			

End of Localizer Test.

5. **VERIFY** Glide Slope Cancel Discrete Input (J1A-21) by changing the state of the **G/S CANCEL** Switch and verifying that the CVT Item observed value matches the expected value. This switch is a momentary type.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
G/S CANCEL Captain's Side	**GSCan**	Press and hold the Captain's G/S CANCEL switch	1			
G/S CANCEL Captain's Side	**GSCan**	Release the Captain's G/S CANCEL switch	0			
G/S CANCEL First Officer's	**GSCan**	Press and hold the First Officer's G/S CANCEL switch	1			
G/S CANCEL First Officer's	**GSCan**	Release the First Officer's G/S CANCEL switch	0			

End of G/S CANCEL Discrete Test.

6. This discrete input is optional, verify only when installed. This discrete input can be activated by one or more of the following: cockpit switch, flight director backcourse switch, selected course 180 degrees opposite of the current heading. Using aircraft wiring diagrams, determine which systems will activate this discrete. The Glideslope Inhibit Discrete Input (J1B-02=28Vdc, J1A-05=Gnd) is checked by changing the state of the discrete with each applicable system and verifying that the CVT item observed value matches the expected value.

VERIFY Glide Inhibit Discrete.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Glideslope Inhibit	**GSInh**	Backcourse Not Selected	0			
Glideslope Inhibit	**GSInh**	Backcourse Selected	1			

End of G/S INHIBIT Test.

8.5 Landing Gear

VERIFY the LANDING GEAR Discrete Input (J1B-7=28Vdc /J1B-23=Gnd) by changing the position of the landing gear and verifying the appropriate CVT Item or measuring the input. The state may be changed via switches or cockpit controls.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Landing Gear	**LandGrDsc**	Gear Down	1			
Landing Gear	**LandGrDsc**	Gear Up (can be simulated)	0			

End of Landing Gear Test.

8.6 Flap Position

The FLAP POSITION is a continuous analog signal provided by the aircraft Flap Transmitter; this signal is used for Windshear Computations. This test is accomplished by varying the Flap position. The Flap Override switch should be in the normal position (Override Off).

VERIFY the FLAP POSITION per the appropriate entries in Appendix B of this document.

TEST VALUES	CVT ITEM **LandFlFAng**		CVT ITEM **LandFlDn**			
ACTUAL FLAP POSITION	**EXPECTED VALUES**	**OBSERVED VALUES**	**EXPECTED VALUES**	**OBSERVED VALUES**	**PASS**	**FAIL**
Set Flaps to 0°	0 ± 4°		0			
Set Flaps to first position						
*Set Flaps to second position						
*Set Flaps to third position						

* The second and third flap position may be deleted from this test if Appendix B does not list them for this aircraft type.

Return the Flaps to the 0° position.

End of Flap Position Test.

8.7 Landing Flap Override

VERIFY the Landing Flap Override (J1A-24=28Vdc/J1B-24=Gnd) by changing the state of the discrete and verifying the appropriate CVT Item or monitoring the input.

1. Set the Flap Override switch to the Normal (Override Off) position.
2. Set the Flap position to the 0° position.
3. **VERIFY** the FLAP OVERRIDE discrete input per the following table.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Flap Override	**LandFlDsc**	Flap Override ON	1			
Flap Override	**LandFlDsc**	Flap Override OFF	0			

End of Landing Flap Override Test.

8.8 Attitude (Pitch & Roll)

Wiring to the Attitude system is checked by varying the inputs of the Attitude system via test equipment or cockpit controls. If the self test or synchro simulator are not available, alternate testing may be accomplished by tilting the VG and comparing CVT Item readout to the #1 ADI.

1. **VERIFY** the Attitude Valid input per the following tables:

Use the table below if using Attitude/Acceleration input type 0, 1, 5 or 7:

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Pitch/Roll#1 Valid	**AnAtt1Val**	Normal Condition	1			
Pitch/Roll#1 Valid	**AnAtt1Val**	Fail Condition	0			

Use the table below if using Attitude/Acceleration input type 7:

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Pitch/Roll#2 Valid	**AnAtt2Val**	Normal Condition	1			
Pitch/Roll#2 Valid	**AnAtt2Val**	Fail Condition	0			

2. **VERIFY** the Attitude Pitch input per the following tables:

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Pitch Angle	**RawPitch1**	0°	0 ± 1°			
Pitch Angle*1,*2	**RawPitch1**	+15° (_____°*)	____ ± 1°			
Pitch Angle*1	**RawPitch1**	-10° (_____°*)	____ ± 1°			

Note:*1) The test operator may chose a different test value than shown. Record actual value used in this block.
Note:*2) Positive Pitch values correspond to a "Pitch Up/Nose Up" condition.

Use the following table if using Attitude/Acceleration input type 7:

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Pitch Angle	**RawPitch2**	0°	0 ± 1°			
Pitch Angle*1,*2	**RawPitch2**	+15° (_____°*)	____ ± 1°			
Pitch Angle*1	**RawPitch2**	-10° (_____°*)	____ ± 1°			

Note:*1) The test operator may chose a different test value than shown. Record actual value used in this block.
Note:*2) Positive Pitch values correspond to a "Pitch Up/Nose Up" condition.

3. **VERIFY** the Attitude Roll input per the following table:

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Roll Angle	**RawRoll1**	0°	0 ± 1°			
Roll Angle*1,*2	**RawRoll1**	+15° (_____°*)	____ ± 1°			
Roll Angle*1	**RawRoll1**	-10° (_____°*)	____ ± 1°			

Note:*1) The test operator may chose a different test value than shown. Record actual value used in this block.
Note:*2) Positive Roll values correspond to a "Left Wing Up/Bank Right" condition.

Use the following table if using Attitude/Acceleration input type 7:

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Roll Angle	**RawRoll2**	0°	0 ± 1°			
Roll Angle*1,*2	**RawRoll2**	+15° (_____°*)	____ ± 1°			
Roll Angle*1	**RawRoll2**	-10° (_____°*)	____ ± 1°			

Note:*1) The test operator may chose a different test value than shown. Record actual value used in this block.
Note:*2) Positive Roll values correspond to a "Left Wing Up/Bank Right" condition.

End of Attitude (Pitch & Roll).

8.9 Acceleration (Honeywell Biax)

1. VERIFY the Acceleration inputs per the following table if using Attitude/Acceleration input types 1, 7 or 8.

Accelerometer	CVT	Expected Values	Observed Values	Pass	Fail
Normal Accel	**RawNrmAcc1**	+1 ± .1			
Longitudinal Accel	**RawLngAcc1**	0 ± .1			

End of Attitude and Acceleration Test.

8.10 AOA System

Varying the AOA vane position checks wiring for the Angle of Attack system. The following table is for a vane mounted on the right-hand side of the aircraft. The values should be reversed if the vane is mounted on the left side. **VERIFY** the AOA input per the values in Appendix C.

Signal	CVT Item	Test Value: AOA Vane Position	Expected Value	Observed Value	Pass	Fail
Right AOA	**RawAACAOA1**	Rotate Full Counter Clockwise				
Right AOA	**RawAACAOA1**	Rotate Full Clockwise				

* If the AOA probe is digital the appropriate CVT item is RawAAOA1.

NOTE: Some AOA probes travels 360 degrees. They have no mechanical stops. Refer to Appendix C for a complete list. To test these units, move the probe to several positions, both clockwise and counterclockwise, up to 45°. Measure the position of the probe with a protractor. Confirm the measured value is the same, ± 4.0° accuracy, as the CVT item RawAACAOA1 (for analog units) or RawAAOA1 (for digital units).

End of AOA Test.

8.11 Altitude Call-Out Enable (Inhibit)

VERIFY the ALTITUDE CALLOUT ENABLE Discrete Input (J2-F4), by verifying the CVT Item Observed Value matches the Expected Value.

Note: Some Aircraft may have an Altitude Callout Inhibit switch while other aircraft may be hardwired. If the aircraft wiring diagrams indicate that it is hard wired, then mark the PASS column for the "Inhibit Switch Selected" as N/A.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
ALT CALLOUT INHIBIT	**CalloutEnb**	Inhibit switch Selected	0			
ALT CALLOUT INHIBIT	**CalloutEnb**	Inhibit switch NOT Selected (hard wired)	1			

End of ALTITUDE CALLOUT ENABLE Discrete Test.

8.12 Audio Inhibit

This discrete input is optional at the customer's discretion: verify when installed. The AUDIO INHIBIT Discrete Input (J1B-16=Gnd/J1B-8=28Vdc) is checked by changing the state of the **GPWS VOICE OVERRIDE** select switch and verifying that the CVT Item observed value matches the expected value.

1. VERIFY the discrete input per the following table (via GPWS Audio Inhibit Switch , IF INSTALLED).

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Audio Inhibit	**AudInhDsc**	Selected	1			
Audio Inhibit	**AudInhDsc**	Not Selected	0			

End of AUDIO INHIBIT Discrete Test.

8.13 Terrain Awareness & TCF inhibit

Terrain Awareness & TCF Inhibit

The TERRAIN INHIBIT Discrete Input (J2-G4) is checked by changing the state of the **TERRAIN INHIBIT** Switch and verifying that the CVT Item observed value matches the expected value.

1. VERIFY the discrete input per the following table.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Terrain Inhibit	**TerrDis**	Select Terrain Inhibit	TRUE			
Terrain Inhibit	**TerrDis**	De-select Terrain Inhibit	FALSE			

End of TERRAIN INHIBIT Discrete Test.

8.14 Position Source

Verifying the following data checks the FMS/GPS input (wiring/signal) to the EGPWS.

NOTE: Position indications are provided in the form of W x° y.z' or N x° y.z'. The EGPWS stores position as ± x.xxx°. For reference, in the EGPWS CVT item, West and South = "-" and North and East = "+". To convert the x° y.z' to x.xxx° divide the y.z' by 60 and add it to the leading x. For example, W 119° 36.6' is equivalent to the EGPWS value -119.610 (36.6/60 + 119).

VERIFY FMS Position Inputs per the following table.

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Latitude (310)	**RawFLat1**	Present Position _____°	PP ± 0.1°			
Longitude (311)	**RawFLng1**	Present Position _____°	PP ± 0.1°			
Ground Speed (312)	**RawFGSpd1**	_____kts	X ± 10 kts			
True Heading (314)	**RawFTHd1**	Present Heading	PH ± 3°			
Magnetic Var (147) (if required)	**RawFMVar1**	Magnetic Var at Present Position	MV ± 1°			

NOTE: The CVT Item for True Heading is displayed as ± 180°. If the aircraft heading is 350 degrees, the CVT Item will read –10 degrees, if the aircraft heading is 240 degrees, the CVT Item will read –120 degrees. If the aircraft heading is 155 degrees the CVT Item will read 155 degrees.

VERIFY the FMS Nav Mode Word (if installed) per the following table:

NOTE: Only one Nav Mode must be tested (i.e., only the one appropriate row from the following table will be tested based on the FMC Nav Mode).

FMC NAV MODE	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Dead Reckon	**TANvMode1**	0				
Inertial	**TANvMode1**	1				
VOR DME	**TANvMode1**	2				
GPS	**TANvMode1**	3				
DME DME	**TANvMode1**	4				
VLF/Omega	**TANvMode1**	5				
VLF/Omega/ Inertial	**TANvMode1**	6				
No Nav	**TANvMode1**	7				

VERIFY the external GPS (if installed) per the following table:

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Latitude (110)	**RawGLat1****	Present Position _____°	PP ± 0.1°			
Longitude (111)	**RawGLng1***	Present Position _____°	PP ± 0.1°			
Altitude (076)	**RawGAlt1**	Field Elevation* _____ft	FE ± 750 ft			

* If the runway elevation is unknown, see CVT item CRwyElv.

VERIFY the *internal* GPS (if installed) per the following table:

Signal	CVT Item	Test Value	Expected Value	Observed Value	Pass	Fail
Latitude	**GPSLatude**	Present Position _____°	PP ± 0.1°			
Longitude	**GPSLngude**	Present Position _____°	PP ± 0.1°			
Altitude	**RawGAlt1**	Field Elevation* _____ft	FE ± 750 ft			

* If the runway elevation is unknown, see CVT item CRwyElv.

8.14.1 Internal GPS

(Optional test for use with 965-1076-020 EGPWS only)

This test verifies the Internal GPS interface of the EGPWS. The Internal GPS interface of the EGPWS is a single coaxial antenna cable. The number of satellites tracking and their signal to noise ratio (SNR) is tested in this section.

Note: Perform the test outside of the hangar and far enough from any buildings so that the GPS antenna is not shadowed from the horizon by any buildings. Wait one-half hour (30 minutes) after power up of the EGPWS outside the hangar before beginning the test.

Note: In the following test the "STATE" in the GPS test screen will change. Possible GPS States are: *Initialization, Search the Sky, Acquisition, Transition, Navigation, Navigation with possible Data Collection, Navigation with Position Degradation,* or *Dead Reckon*. The GPS must be in one of the three Navigation states when verifying pass/fail data. The GPS test screen is static and can be repeated by typing Ctrl-r.

Note: For this test disregard all information on the GPS test screen except: STATE, SNR and TRACKING.

Test Procedure:

1. Switch WinVIEWS from the Data Display Mode to the Terminal Mode.
2. At the Terminal Mode prompt (>); type GPS{enter}. (See Table 8.14.1 for an example of returned data.)
3. Verify that Internal GPS is tracking 5 or more satellites. (A "1" in the tracking column means that it is tracking that satellite.)

Pass _____	**Fail** _____

4. Verify that the SNR (signal to noise ratio) of all tracking satellites is 42 dB or greater. (When a "0" is in the Tracking column disregard the SNR.)

Pass _____	**Fail** _____

5. End of Internal GPS test.

Table 8.14.1 Example of WinViews GPS test screen

```
>GPS

        XPRESS GPS STATUS:
                RS-232 Communiciation OK
                STATE: Navigation

                Integrity State: 0x00                   Masked Integrity Warning: 0x00
                Bad Coverage: 0x00                      Altitude Aiding in use: 0x00
                Nav Mode: 0x00                          Error Status: 0x0400

                Number of Satellites Tracking: 08

              Channel    Sat ID    SNR    Elev    Azm    Health    Tracking
                    1        10     49      51     45         3           1
                    2        30     48      58    105         3           1
                    3         5     46      29     86         3           1
                    4        13     44       7     37         3           1
                    5         6     49      66    151         3           1
                    6        25     43      14    142         3           1
                    7        24     50      41     28         3           1
                    8        17     42      23    118         3           1
>
```

End of POSITION SOURCE Test.

8.15 Display Range Selection

The following is an optional test for EGPWS installations using Terrain Display. Proper Terrain Display Range Selection is checked by selecting the Terrain Display on each display, changing the selected range by varying the Radar Control Panel Range selection, and verifying the range displayed on each display and the PC.

Note: The range ring and associated number in the center of the screen is the half-range. Full range is double this value.

Test Procedure:

1. Ensure that the display mode is suitable for displaying weather. Depress all TERR switches.
2. Set the aircraft's display range to the smallest value possible. **VERIFY** the value of the range selected on the display matches the value of the CVT item, TAWxRng1 ± 1 nm accuracy. Perform this test for each value or range available on the aircraft's display.

Signal	CVT Item	Display Range	Expected CVT Value	Observed Value	Pass	Fail
Range	TAWxRng1		X ± 1 nm			
Range	TAWxRng1		X ± 1 nm			
Range	TAWxRng1		X ± 1 nm			
Range	TAWxRng1		X ± 1 nm			
Range	TAWxRng1		X ± 1 nm			
Range	TAWxRng1		X ± 1 nm			
Range	TAWxRng1		X ± 1 nm			

3. For aircraft equipped with dual range controllers, **VERIFY** the #2 range selection and displays per the following table.

Signal	CVT Item	Display Range	Expected CVT Value	Observed Value	Pass	Fail
Range	TAWxRng2		X ± 1 nm			
Range	TAWxRng2		X ± 1 nm			
Range	TAWxRng2		X ± 1 nm			
Range	TAWxRng2		X ± 1 nm			
Range	TAWxRng2		X ± 1 nm			
Range	TAWxRng2		X ± 1 nm			
Range	TAWxRng2		X ± 1 nm			

4. De-select TERR mode on each display by pressing all TERR switches. **VERIFY** each display no longer displays Terrain.

PASS	**FAIL**

End of Display Range Selection Test.

9 Self Test Level 6 - Discrete Inputs

Self Test Level 6 is a discrete input test. In this test, the EGPWS provides voice verification of any changes to the state of a discrete input as a means to verify proper function and input wiring.

NOTE: Ignore the status of the GPWS FAIL, WS FAIL and the TERRAIN NOT AVAILABLE annunciators.

1. Initiate a Self Test by depressing the cockpit GPWS '**PRESS TO TEST**' switch (this is level 1).
2. Once the Self Test audio starts, press the GPWS '**PRESS TO TEST**' switch for less than 2 seconds (this will start level 2).
3. Immediately after the Self Test Level 2 "PRESS TO CONTINUE" message is annunciated, depress the cockpit GPWS 'PRESS TO TEST' switch (this will start level 3).
4. Immediately after the Self Test Level 3 "PRESS TO CONTINUE" message is annunciated, depress the cockpit GPWS 'PRESS TO TEST' switch (this will start level 4).
5. Immediately after the Self Test Level 4 "PRESS TO CONTINUE" message is annunciated, depress the cockpit GPWS 'PRESS TO TEST' switch (this will start level 5).
6. Immediately after the Self Test Level 5 "PRESS TO CONTINUE" message is annunciated, depress the cockpit GPWS 'PRESS TO TEST' switch (this will start level 6).
7. Alternatively, the RS-232 Self Test Command, ST 6, or the EGPWS Front Panel switch may be used to initiate this test.
8. The voice message "Discrete Input Test – Press to Cancel" will annunciate every 60 seconds.

Test Procedure:

VERIFY that each discrete is annunciated to the proper state when pressed or toggled.

Discrete	Installed Yes/No	Active Voice	Inactive Voice	Pass	Fail
Audio Inhibit		Audio Inhibit	Audio Not Inhibit		
Glideslope Cancel		Glideslope Canceled	Glideslope Enabled		
Glideslope Inhibit		Glideslope Inhibit True	Glideslope Inhibit False		
Steep Approach		Steep Approach Selected	Steep Approach Not Selected		
Terrain Inhibit		Terrain Off	Terrain On		
GPWS Inhibit		GPWS Inhibit	GPWS Not Inhibit		
Altitude Callout Enable		Callouts Enabled	Callouts Disabled		
Flap Override		Landing Flaps	Not Landing Flaps		

End of Self Test Level 6 – Discrete Inputs

10 EMI

It is recommended, but not required, that this test be performed outside the hangar with the aircraft fully operational and engines running. Turn power off to the EGPWS and remove the ground test Break-Out-Box (if installed). Place the EGPWS directly into its mounting rack and turn power back on.

NOTE: The installer may use their own EMI test procedure in lieu of this section.

1. All Avionics Systems ON and receiving signals (e.g. VOR/DME, ILS/LOC (test set can be used), ADF, Omega/Loran/INS/FMS/GPS with signals displayed on primary instruments.
2. ADI's, HSI's, Compass ON.
3. Flight Director ON and set to a mode suitable to display commands and pull flags out of view.
4. Engine Instruments, Stall Warning and Flap Indication powered.
5. Tune all Radio receivers to active channels (e.g. tower frequency), and switch audio ON to a suitable volume and note any interference or background noise.
6. Perform an EGPWS Self Test and **VERIFY** that no errors are reported.

PASS	FAIL

7. Note any interference or background noise on the active VHF channels and that there is no significant change in indications and operation mode of the systems identified above during and after the EGPWS Self Test.
8. Pull the EGPWS circuit breaker.
9. **VERIFY** there is no appreciable difference in background noise or interference and no significant change in indications and operation mode of the systems identified above with the EGPWS enabled and with the EGPWS disabled.

PASS	FAIL

10. Push in the EGPWS circuit breaker.
11. Transmit on each VHF transceiver, and each HF transmitter (if installed).
12. **VERIFY** no alerts or abnormal operation of the EGPWS occurs and no significant change in indications and modes of the systems identified above.

PASS	FAIL

13. Tune all ILS frequency (108.10 through 111.97) and **VERIFY** that there is NO Glideslope or Localizer Deviation, if frequency selected is not an active frequency (pause approximately 10 second at the tuned frequency).

PASS	FAIL

14. **End of EMI Test.**

THIS CONCLUDES THE EGPWS GROUND TESTS

APPENDIX A

RS-232 COMMUNICATION WITH THE EGPWS

The EGPWS contains software that allows monitoring of its internal parameters, for testing purposes, without altering its operation. The monitoring of these parameter values enables the operator to quickly determine if the correct signal and scaling is being used by the EGPWS computer. The communication link utilizes the RS-232 Communication Protocol configured as follows:

19200 Baud, No Parity, 8 bits, and 1 stop bit.

The RS-232 interface with the EGPWS can be accomplished via the units' front or rear connector. The connection between a PC (with a standard DB9 serial port connector) and the EGPWS RS-232 interface is defined as follows: (Please note that the EGPWS will activate only one of its RS-232 ports; it will activate the first port from which it receives the link initialization character, the **CONTROL Z**, ^Z, after primary power is applied to the EGPWS. The ^Z is automatically sent by WinVIEWS)

	RS-232 Receive	**RS-232 Transmit**	**RS-232 Ground**
EGPWS Rear Connector (MK-VII Enhanced)	Pin J2-A6	Pin J2-A5	Pin J2-A4
EGPWS Front Connector	Pin 3	Pin 4	Pin 1
Standard DB9 Connector (for a PC)*	Pin 3	Pin 2	Pin 5

***NOTE:** Some PC Comm Ports have Pins 2 & 3 reversed from what is described above.

Front Panel Test Connector

A test connector is provided on the EGPWC front panel. This provides access for a PC test monitor and future portable data loading capabilities. The mating connector for the EGPWC test plug is a male (pins) 15 pin double density D-subminiature type, Positronics Industries (kit) part number ODD15M1OYOZ or the following individual parts:

Nomenclature (AMP)	**Amp Part Number**	**Military Part Number**
Connector Shell (HDP-22 Crimp Snap In Contact)	748364-1	reference MIL-C-24308
Size 22 DM Crimp Snap In Contacts Pin ø.030	204370-2	M39029/58-360
Backshell (Shielded Cable Clamp Assembly)	745854-5	
Jackscrews (4-40 Male Jackscrew Kit)	747784-8 (specify quantity of 2 per connector)	
Grommet Sets	747746-1	

The following tools will work with both Positronics, Amp, and Mil Spec Connectors:

Insertion / Extraction Tool	91067-1	M81969/1-04
Hand Crimp Tool		M22520/2-01
Positioner		M22520/2-09

WinVIEWS OPERATION:

Windows Virtual Interface to the Enhanced Warning System

Overview:

WinVIEWS software is a tool developed by Honeywell to monitor or view values within the EGPWS. The WinVIEWS software provides a monitor function that does not alter the operation of the EGPWS. The monitoring of the values assists in the installation testing of the EGPWS by allowing the operator to quickly determine if the correct signal and scaling is being used by the EGPWS. Additionally, WinVIEWS provides a detailed status of the software configuration and input signals which enables quick identification of system anomalies.

Components:

The WinVIEWS software consists of the following components.

WinVIEWS.EXE

WinVIEWS.HLP

In addition to the above software, a command file may also be utilized. The command file is a simple text file that should include each CVT Item used in this test procedure. A sample command file for this test procedure is found in Appendix B. The file must be a 'Text Only' type of file, such as those created in the MicroSoft Windows NotePad program. It should have a filename extension of .CMD. Once this file is loaded, WinVIEWS can automatically display the current value of each parameter listed in the file.

Normal Operation for Ground Testing the EGPWS:

STEP 1 Connect the PC to the EGPWS via the appropriate RS-232 cable as defined above.

STEP 2 On the PC, start Windows 3.1, or higher.

STEP 3 Start the WinVIEWS.EXE program.

STEP 4 Under the File Menu select the "Load Command File" option and load the appropriate Command File.

STEP 5 Use F6 to select the Display Mode. Each CVT Item listed in the Command File will be continuously updated at a rate of greater than once per second. The values shown for the CVT Items listed will be the test values.

APPENDIX B

FLAP POSITIONS

Aircraft Type	Aircraft number Designation	Flap Position LandFlFAng	Landing Flap Position LandFlDn
Hawker 700/800	#8, 9, 10	0, 25, 45 degrees	45 degrees
Citation V/Ultra	#28, 29	0, 7, 15, 35 degrees	35 degrees
Citation III/VI/VII	#30	0, 7, 20, 37 degrees	37 degrees
Citation Bravo	#31	0, 15 40 degrees	40 degrees
Lear 35 & Lear 55	#32, 33	0, 20, 40 degrees	40 degrees
Falcon 20F	#34, 35	0, 25, 40 degrees	40 degrees
Falcon 50	#36	0, 20, 48 degrees	48 degrees
Lear 31A	#37	0, 20, 40 degrees	40 degrees
Gulfstream G-II/G-IIB, GIII	#38, 39	0, 39 degrees	39 degrees
Canadair CL600/CL601	#44, 45	0, 30, 45 degrees	45 degrees
Beechjet 400	#46	0, 10, 20, 30 degrees	30 degrees
Lear 35	#47	0, 20, 40 degrees	40degrees
ASTRA SP & Westwind II	#50, 51	0, 12, 20, 40 degrees	40 degrees
Falcon 10/100	#55	0, 15, 30, 52 degrees	52 degrees
Citation Encore	#66	0, 7, 15, 35 degrees	35 degrees
Falcon 200	#67	0, 15, 40 degrees	40 degrees

APPENDIX C

AOA VALUES

Aircraft Type	Aircraft number Designation	Clockwise RawAACAOA1	Counter Clockwise RawAACAOA1
Hawker 800 Safeflight AOA	**#8**	+43.7 ± 4°	-15.0 ± 4°
Hawker 700/800 Teledyne AOA	**#9, 10**	+34.0 ± 4°	-2.0 ± 4°
Citation V/Ultra Teledyne AOA	**#28**	+46.6 ± 4°	-15.4 ± 4°
Citation V/Ultra Safeflight AOA	**#29**	+41.1 ± 4°	-17.5 ± 4°
Citation III/VI/VII	**#30**	+55.1 ± 4°	-6.9 ± 4°
Citation Bravo	**#31**	SEE NOTE IN SECTION 8.10	SEE NOTE IN SECTION 8.10
Lear 55	**#32**	+48.0 ± 4°	-4.0 ± 4°
Lear 35	**#33**	+45.0 ± 4°	-7.0 ± 4°
Falcon 20F	**#34**	+34.8 ± 4°	+0.2 ± 4°
Falcon 20F	**#35**	+50.0 ± 4°	0.0 ± 4°
Falcon 50	**#36**	+42.7 ± 4°	+0.3 ± 4°
Lear 31A	**#37**	+45.0 ± 4°	-7.0 ± 4°
Gulfstream G-II, G-IIB, & G-III	**#38, 39**	+44.0 ± 4°	-8.0 ± 4°
Challenger 600/601	**#44, 45**	+37.5 ± 4°	-4.5 ± 4°
Beech 400	**#46**	+46.0 ± 4°	-16.0 ± 4°
Lear 35	**#47**	+40.0 ± 4°	-2.0 ± 4°
ASTRA SP	**#50**	+48.0 ± 4°	-18.0 ± 4°
Westwind II	**#51**	+28.0 ± 4°	-6.0 ± 4°
Falcon 10/100	**#55**	+42.7 ± 4°	+0.3 ± 4°
Citation Encore	**#66**	SEE NOTE IN SECTION 8.10	SEE NOTE IN SECTION 8.10
Falcon 200	**#67**	+42.7 ± 4°	+0.3 ± 4°

* All values are relative to the aircraft waterline (e.g. positive AOA values indicate the trailing edge of the AOA vane is above the aircraft waterline).

APPENDIX D

B.1 Command File: MKVIIGTP.CMD

B.2 The format for the WinVIEWS command file is:

1. ASCII Text Only; no spaces

2. A CVT Item as specified in the test procedure

3. Each CVT Item Name is followed by a C/R.

RawRA1	ACAS1Val	RawLoc1	AudInhDsc
ARA1Val	ACASVal	LandGrDsc	TerrDis
RawRA2	ILSTuned1	LandFlFAng	RawFLat1
ARA2Val	ILSTuned2	LandFlDn	RawFLng1
DHDsc	AGS1Val	LandFlDsc	RawFGSpd1
RawBAlt1	RawAACGS1	AnAtt1Val	RawFTHd1
RawBAlt2	AGS2Val	AnAtt2Val	RawFMVar1
RawBCAlt1	RawAACGS2	RawPitch1	TANvMode1
RawCAS1	RawGS1	RawPitch2	RawGLat1
RawBaroRt1	GSCan	RawRoll1	RawGLng1
AnaCrAlt	GSInh	RawRoll2	RawGAlt1
RawAACCAS1	ALoc1Val	RawNrmAcc1	GPSLatude
RawAACCAS	RawAACLoc1	RawLngAcc1	GPSLngude
RawBaRtSy1	ALoc2Val	RawAACAOA1	TAWxRng1
ABaroRt1Val	RawAACLoc2	CalloutEnb	TAWxRng2